

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Fort St. Vrain, Unit No. 1										DOCKET NUMBER (2) 0 5 0 0 0 2 1 6 7				PAGE (3) 1 OF 0 17			
TITLE (4) Unplanned Liquid Waste Release While Recirculating Through Activity Monitors																	
EVENT DATE (5)			LER NUMBER (3)				REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)							
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME				DOCKET NUMBER(S)				
0	3	1	7	8	5	8	5	0	0	4	N/A				0 5 0 0 0		
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.72(b)(2)(iii) (Check one or more of the following) (11)																	
OPERATING MODE (9)		N															
POWER LEVEL (10)		0 1 0 0															
20.402(a)		20.406(a)(1)(i)				20.406(a)(1)(ii)				20.406(a)(1)(iii)				20.406(a)(1)(iv)			
20.402(b)		20.406(b)(1)				20.406(b)(2)				20.406(b)(3)				20.406(b)(4)			
20.402(c)		20.406(c)(1)				20.406(c)(2)				20.406(c)(3)				20.406(c)(4)			
20.402(d)		20.406(d)(1)				20.406(d)(2)				20.406(d)(3)				20.406(d)(4)			
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20.402(f)		20.406(f)(1)				20.406(f)(2)				20.406(f)(3)				20.406(f)(4)			
20.402(g)		20.406(g)(1)				20.406(g)(2)				20.406(g)(3)				20.406(g)(4)			
20.402(h)		20.406(h)(1)				20.406(h)(2)				20.406(h)(3)				20.406(h)(4)			
20.402(i)		20.406(i)(1)				20.406(i)(2)				20.406(i)(3)				20.406(i)(4)			
20.402(j)		20.406(j)(1)				20.406(j)(2)				20.406(j)(3)				20.406(j)(4)			
20.402(k)		20.406(k)(1)				20.406(k)(2)				20.406(k)(3)				20.406(k)(4)			
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20.402(m)		20.406(m)(1)				20.406(m)(2)				20.406(m)(3)				20.406(m)(4)			
20.402(n)		20.406(n)(1)				20.406(n)(2)				20.406(n)(3)				20.406(n)(4)			
20.402(o)		20.406(o)(1)				20.406(o)(2)				20.406(o)(3)				20.406(o)(4)			
20.402(p)		20.406(p)(1)				20.406(p)(2)				20.406(p)(3)				20.406(p)(4)			
20.402(q)		20.406(q)(1)				20.406(q)(2)				20.406(q)(3)				20.406(q)(4)			
20.402(r)		20.406(r)(1)				20.406(r)(2)				20.406(r)(3)				20.406(r)(4)			
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20.402(z)		20.406(z)(1)				20.406(z)(2)				20.406(z)(3)				20.406(z)(4)			
LICENSEE CONTACT FOR THIS LER (12)																	
NAME Jim Eggebroten, Technical Services Engineering Supervisor										TELEPHONE NUMBER AREA CODE 3 0 3 7 8 5 - 1 2 2 3							
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																	
CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFAC- TURER	REPORTABLE TO NRC							
SUPPLEMENTAL REPORT EXPECTED (14)												EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR	
YES (If yes, complete EXPECTED SUBMISSION DATE)												XX NO					

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On March 17, 1985, with the reactor shutdown and depressurized, an isolation valve failure resulted in an unplanned release from the plant radioactive liquid waste discharge system.

At 1624 hours on March 17, 1985, a non-emergency report to the Nuclear Regulatory Commission was initiated per the requirements of 10 CFR 50.72(b)(2)(iii) "Four Hour Report".

Based on investigation findings, this event was determined to be reportable pursuant to the requirements of 10 CFR 50.73(a)(2)(v).

The concentration of radionuclides in the cooling tower blowdown, and in unrestricted areas, remained within the limits specified in Table II, Column 2, of Appendix B to 10 CFR 20 throughout this event.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1)  Fort St. Vrain, Unit No. 1	DOCKET NUMBER (2)  0 5 0 0 0 2 6 7	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 5	— 0 0 4	— 0 0	0 2	OF	0 7

TEXT (If more space is required, use additional NRC Form 388A's) (17)

BACKGROUND:

The radioactive liquid waste system is designed to collect, permit sampling/analysis, and monitoring of all aqueous wastes discharged from the reactor plant. All liquid effluent releases are diluted with cooling tower blowdown flow prior to release to the surrounding surface waters. The rate of radioactive liquid waste release, along with cooling tower blowdown flow, are controlled to assure that the limits specified in 10 CFR 20 are not exceeded.

All releases from the liquid waste system are assured a minimum dilution factor of 110 since maximum liquid waste transfer pump capacity is 10 gpm and minimum blowdown flow is 1100 gpm.

Liquid wastes whose activity is expected to be low are collected in the liquid waste sump. When a preset level is reached in the sump, its contents are pumped through filters to one of the liquid waste receivers. Liquid wastes originating as a result of decontamination operations or those which have the potential of containing dissolved radioactive gases are routed directly to one of the liquid waste receivers (see Figure 1). When one of the liquid waste receivers becomes full, its contents are transferred through the demineralizers to the monitor tank. Once the liquid has been transferred to the monitor tank, it is then recirculated through the demineralizers for a minimum of one hour. This recirculation provides thorough mixing of the liquid to allow collection of a representative sample, and additional removal of contaminants. Samples are collected from a point located at the discharge of the liquid waste transfer pumps. The samples are analyzed for individual isotopes, gross alpha activity, principle gamma emitters, entrained gases, gross beta activity, and tritium concentration. Should the results of these analyses show high concentrations of radionuclides, the monitor tank contents can then be recirculated through the demineralizers to reduce the activity concentrations. Another sample would be collected and analyzed as stated above, should additional recirculation be necessary. The Radiation Protection staff then provides the Shift Supervisor with an allowable release rate, calculated from the Offsite Dose Calculation Manual (ODCM) in accordance with Technical Specification ELCO 8.1.2. This ensures that the radioactive liquid waste, when diluted with the specified cooling tower blowdown flow, can be released to surrounding surface waters in accordance with the limits specified in 10 CFR 20.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Fort St. Vrain, Unit No. 1	DOCKET NUMBER (2)  0 5 0 0 0 2 6 7 8 5 - 0 0 4 - 0 0 0 1 3 OF 0 7	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		

TEXT (If more space is required, use additional NRC Form 366A's) (17)

EVENT DESCRIPTION:

On March 17, 1985, following monitor tank recirculation and liquid waste sample analyses, operations personnel began preparations for releasing the monitor tank contents to the cooling tower blowdown line. As part of these preparations, the monitor tank contents were started on recirculation through RT-6212 and RT-6213 at 0030 hours, in order to determine the required radiation monitor setpoint in accordance with surveillance procedure ESR 8.1.2bcd-M "Radioactive Liquid Effluent System Instrumentation Functional Test". At approximately 0747 hours, with recirculation through the radiation monitors still in progress, operators discovered the level of liquid waste in the monitor tank had fallen from 136" to 84". The Shift Supervisor was notified of the situation immediately and Operations personnel were dispatched to investigate the problem and collect a sample from the surrounding surface waters. After unsuccessful attempts to positively identify the flow path of the lost liquid (approximately 900 gallons) operators terminated recirculation of the monitor tank contents.

Investigation of the incident continued with operators inspecting valve lineups and testing the isolation functions of potential flow paths. At approximately 1500 hours on March 17, 1985, operators verified that the flow path of the leak was through V-6241 (see Figure 1). This was accomplished by isolating the flow paths to the demineralizers and reactor building sump, then with V-6241 verified to be closed, the liquid waste transfer pumps were started and FR-6215 was monitored. Since operators had previously verified isolation of the flow paths to the reactor building sump and demineralizers, any flow indicated on FR-6215 would be indicative of liquid flow through V-6241. Following the start of the transfer pumps, operators verified on FR-6215 that isolation valve V-6241 was leaking through at a rate of approximately 2.0 gpm. It was noted during the investigation that prior to recirculation through the activity monitors the demineralizers had been inadvertently isolated. However, this condition is not considered to have contributed to the failure of V-6241 to isolate. These findings were reported at 1505 hours to the Shift Supervisor, who then made a Non-Emergency Event Notification to the Nuclear Regulatory Commission at 1624 hours, March 17, 1985. Following a flush of the oil separator, operators released the remaining monitor tank contents at 1213 hours on March 18, 1985, in accordance with the flow rates determined by the Radiation Protection staff calculation.

EVENT ANALYSIS:

Radiochemical analysis of the samples collected from the liquid waste transfer pump discharge showed the concentration of radionuclides present in the liquid effluent to require a cooling tower blowdown dilution factor of approximately 276, in order to maintain the release within MPC limits. Given the total quantity of liquid that was unintentionally released, approximately 900 gallons, and the time period recirculation through the radiation monitors occurred, approximately eight hours, it is concluded that V-6241 was leaking at a rate of approximately 1.9 gpm.



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EXPIRES 8/31/85

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

Cooling tower blowdown flow throughout this event was approximately 1550 gpm, therefore, providing a dilution factor of approximately 775. Nevertheless, had cooling tower blowdown flow been at its minimum of 1100 gpm, a dilution factor of approximately 578 would have been provided, which is well within that required to meet the MPC limits.

Had an unexpected concentration of radionuclides entered the discharge line during recirculation, RT-6212 and RT-6213 would have automatically closed HV-6212 and HV-62249 and tripped the transfer pumps well before the activity concentration in the cooling tower blowdown line would have approached MPC.

V-6241 was disassembled in order to determine the specific cause of its failure to isolate. Sediment accumulation in the valve seat was discovered and determined to have prevented proper seating of the valve disc when fully closed. Sediment was removed from the line and the internals of V-6241 were inspected for deficiencies. Valve internals were found to be in good condition, and were reinstalled into the valve body. V-6241 was then leak tested and verified to isolate as designed.

Three potential pathways exist through which sediment could enter the liquid waste discharge line. These pathways are through the reactor building sump discharge line, the firewater flush line, and the liquid waste drains to the receivers (see Figure 1).

Sediment from the reactor building sump is not expected to be significant since all liquids are filtered prior to reaching the liquid waste discharge line. However, the liquid wastes directly routed to the receivers and the firewater used to flush the system are not filtered prior to entering the liquid waste discharge line. Therefore, these two sources are suspected to have contributed to the majority of sediment into the system.

Addition of a strainer in the liquid waste discharge line has been requested and approved. This strainer will be installed upstream of V-6241 and downstream of the point where firewater enters the discharge line (see Figure 1). The filtering capability of the strainer would be such that particulate matter of significant size to affect valve operation would be collected thereby preventing sediment accumulation in the discharge line instrumentation and isolation valves. The Nuclear Engineering Division is preparing the final installation package for this strainer.

CORRECTIVE ACTION:

Shortly after discovering the loss of liquid level in the monitor tank, recirculation through the activity monitors was terminated.

Grab samples were collected from the surrounding surface waters for analysis. Activity concentrations in the samples were within MPC limits for all radionuclides.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

V-6241 was removed and inspected for abnormal wear or other deficiencies. Sediment accumulation in the valve seat and adjacent line was removed and the line cleaned. After determining the valve internals of V-6241 to be in good condition, they were reinstalled into the valve body. Operations personnel then isolated V-6241, with the transfer pumps running and monitored FR-6215 to verify proper isolation. No flow was observed and V-6241 was verified operable.

A design change action request (DCAR) to install a strainer in the liquid waste discharge line has been initiated and approved. This strainer will collect any sediment admitted to the liquid waste discharge line from either fire water or the liquid waste receivers and monitor tank. The Nuclear Engineering Division is in the process of completing the final installation package for this modification.

During future recirculation through the radiation monitors, both HV-6212 and V-6241 will be closed to provide double isolation, ensuring single failure protection. Interim measures will be initiated to reflect this requirement, until applicable procedure changes are completed.

# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
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TEXT (If more space is required, use additional NRC Form 365A's) (17)

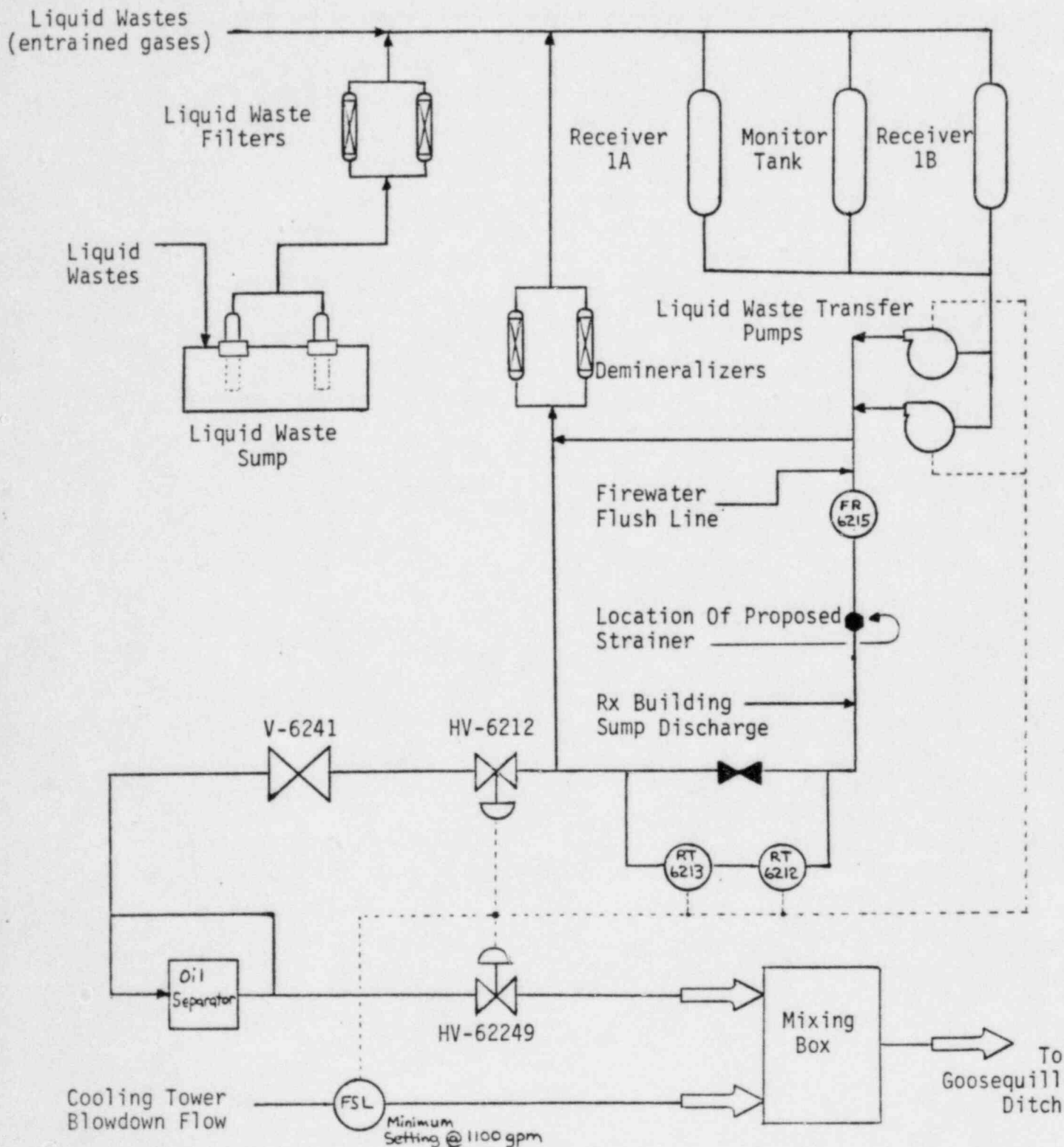


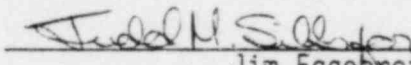
FIGURE 1.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

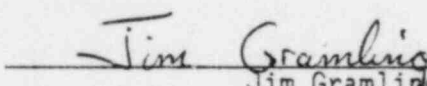
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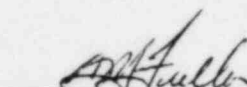
TEXT (If more space is required, use additional NRC Form 366A's) (17)

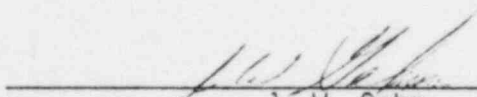
  
Jim Hill  
Technical Services Technician

  
Jim Eggebroten  
Technical Services Engineering Supervisor

Licensing Review By:

  
Jim Gramling  
Nuclear Licensing-Operations Supervisor

  
C. H. Fuller  
Station Manager

  
J. W. Gahm  
Manager, Nuclear Production



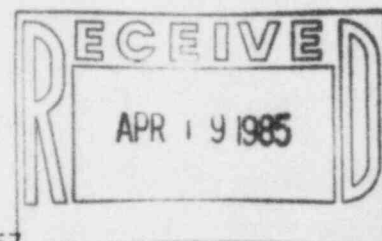
# Public Service

16805 WCR 19 1/2, Platteville, Colorado 80651

Public Service  
Company of Colorado

April 16, 1985  
Fort St. Vrain  
Unit No. 1  
P-85129

Regional Administrator  
Attn: Mr. E. H. Johnson  
Region IV  
U. S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76011



Docket No. 50-267

SUBJECT: Licensee Event Report  
85-004, Final Report

REFERENCE: Facility Operating  
License No. DPR-34

Dear Mr. Johnson:

Enclosed please find a copy of Licensee Event Report  
No. 50-267/85-004, Final, submitted per the requirements of  
10 CFR 50.73(a)(2)(v)(c).

Sincerely,

J. W. Gahm  
Manager, Nuclear Production

Enclosure

cc: Director, MIPC

JWG/djm

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